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HYDROLYZED SAWDUST FOR DAIRY COWS

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For many years there has been frequent discussion as to whether sawdust could not be utilized in some manner as a stock food. Since untreated sawdust is valueless for this purpose, various methods of hydrolyzing sawdust - or treating it chemically to increase its digestibility and feeding value - have been suggested. No definite, scientific feeding trials, however, appear to have been carried on with such materials.

In the work of the Forest Products Laboratory of the United States Department of Agriculture, located at the University of Wisconsin, on the utilization of timber wastes, an improved process of hydrolyzing sawdust with dilute acid under pressure has been developed. In this process about 25 per cent of the dry weight of the wood is converted into sugar and the rest of the wood fiber or cellulose is changed considerably in physical character and solubility. This process is now being used on a commercial scale in the manufacture of industrial alcohol.

With farm grains at the high prices during 1918-1919 it appeared desirable to ascertain whether this hydrolyzed sawdust could be used as a substitute for grain. We,

carried on an experiment with dairy cows, using hydrolyzed sawdust prepared by E. C. Sherrard of the Forest Products Laboratory from eastern white pine. Because only a limited amount of hydrolyzed sawdust was available, but three cows could be used in the trial. These were fed for three periods of four weeks each. In the first and third periods the cows were given an excellent ration consisting of alfalfa hay, corn silage, and a concentrate mixture consisting of 55 parts of ground barley, 30 parts wheat bran, and 15 parts of linseed meal. In the second feeding period the hydrolyzed or treated sawdust was substituted for a part of the barley in the mixture. Two pounds of sawdust were used in place of one of barley. The grain mixture then consisted of 30 parts of sawdust, 40 parts of ground barley, 30 parts of wheat bran and 15 parts of linseed meal. The cows kept up their production through this period and maintained their weights even better than on the ration fed during the first and third periods.

The conclusion was reached as a result of this trial that apparently dairy cows could be fed a limited amount of hydrolyzed sawdust for a short period of time without bad results. It was appreciated that the hydrolyzed sawdust contained only a negligible amount of protein and for that reason could not entirely take the place of barley or of other farm grains. In both of the rations used in this trial the protein was furnished by the other feeds.

Last winter another trial was carried on to study further the value of hydrolyzed sawdust for dairy cows. We appreciated that with the present prices of farm grains throughout the corn belt there was no probability that hydrolyzed sawdust could become of any great importance as a live stock feed. However, in certain districts of the country, especially in the far West, carbohydrate-rich feeds are high in price compared with other feeding stuffs. We, therefore, thought it worth while to gain further information on this matter in order to have it available for other districts of the country and also even for corn belt farmers should farm grains never again become high in price compared with roughage.

In this trial two lots each of three cows were fed for seventy days. On lot received an excellent ration consisting of alfalfa hay, corn silage, and a concentrate mixture made up of 60 parts yellow corn, 20 parts wheat bran, and 20 parts linseed meal. The ration for the other lot was the same except that hydrolyzed sawdust made from western white pine was gradually substituted for ground corn at the rate of two pounds of the sawdust for one pound of corn. When the percentage of sawdust in the concentrate mixture had reached 40 per cent, two cows failed to eat the mixture well and the proportion of hydrolyzed sawdust was reduced to one-third. No difficulty was experienced throughout the trial in getting the cows to eat this mixture.

In the previous trial the cows were fed by the reversal method, remaining on the hydrolyzed sawdust for only a brief time, but in this trial they were kept on the sawdust throughout the entire period. The cows remained in good condition throughout the trial, the only effect of the hydrolyzed sawdust apparently being a slight constipating tendency. The milk and fat production on the two rations was practically the same and the cows maintained their live weight slightly better on the ration containing the hydrolyzed sawdust. The data, therefore, substantiates that secured in the previous trial, indicating that hydrolyzed sawdust may be substituted for corn or barley in the concentrate mixture for high producing dairy cows without affecting the normal milk flow, and that the hydrolyzed sawdust may form one-fourth to one-third of the concentrate mixture.

As these trials have shown that hydrolyzed sawdust may be used under proper conditions with success for feeding dairy cattle when economic conditions warrant it, the trials will not be continued further at the present time, but it is of interest to note that the United States Department of Agriculture has taken up experimental work on this subject and also one of the eastern experiment stations is contemplating a study of the question.